

WHAT IS CLAIMED IS:

1. A computer readable memory to direct a computer to function in a specified manner, comprising:

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- sub B7*
- a first set of instructions to determine a type of a speaker of the computer;
 - a second set of instructions to select a set of filter coefficients for a digital filter based upon the type of the speaker; and
 - a third set of instructions to realize a parametric equalizer using a digital filter, the digital filter producing an output signal to be input to the speaker from the set of
 - 10 filter coefficients and an input signal.

2. The computer readable memory of claim 1 wherein the second set of instructions further include:

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- a fourth set of instructions to receive user specified equalizer parameters for the parametric equalizer; and
 - a fifth set of instructions to calculate the set of filter coefficients from the user specified equalizer parameters.

3. The computer readable memory of claim 2 further comprising:

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- a sixth set of instructions for insuring that a value of a cut/boost parameter of the user specified equalizer parameters is not too great.

4. The computer readable memory of claim 2 wherein the third set of instructions comprise:

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- a seventh set of instructions to realize a first equalizer band of the parametric equalizer, the first equalizer band having a first cut/boost parameter;
 - an eighth set of instructions to realize a second equalizer band of the parametric equalizer, the second equalizer band having a second cut/boost parameter; and
 - a ninth set of instructions to realize a third equalizer band of the parametric
 - 30 equalizer, the third equalizer band having a third cut/boost parameter.

5. The computer readable memory of claim 4 further comprising a tenth set of instructions for insuring a first combined cut/boost of the first, second and third equalizer bands is not too great.

5 6. The computer readable memory of claim 5 wherein the tenth set of instructions comprise:

an eleventh set of instructions to determine whether a second combined cut/boost of the first equalizer band and the second equalizer band is too great;

10 a twelfth set of instructions to determine whether a third combined cut/boost of the second equalizer band and the third equalizer band is too great; and

a thirteenth set of instructions to determine whether a fourth combined cut/boost of the first equalizer band and the third equalizer band is too great.

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15 7. The computer readable memory of claim 6 wherein:

the eleventh set of instructions uses a relationship for adjacent bands to determine whether the second combined cut/boost is too great;

the twelfth set of instructions uses the relationship for adjacent bands to determine whether the third combined cut/boost is too great; and

20 the thirteenth set of instructions uses a relationship for non-adjacent bands to determine whether the fourth combined cut/boost is too great.

8. A method for improving audio quality of a computer including a Universal Serial Bus (USB) loud speaker, the method comprising the steps of:

25 a) designating a first set of filter coefficients as a selected set of filter coefficients if the USB loud speaker is of a first type;

b) designating a second set of filter coefficients as the selected set of filter coefficients if the USB loud speaker is of a second type;

c) calculating a third set of filter coefficients from equalizer parameters of a parametric equalizer if user specified equalizer parameters are received;

30 d) designating the third set of filter coefficients as the selected coefficients if user specified equalizer parameters are received;

sub-P9
cont

e) generating an output signal to be input to the USB loud speaker from an input signal and the selected set of coefficients.

9. The method of claim 8 further comprising the step of:

5 f) insuring that a value of a cut/boost parameter of the parametric equalizer is not too great.

10. The method of claim 9 wherein the parametric equalizer includes a first equalizer band, a second equalizer band and a third equalizer band.

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11. The method of claim 10 wherein step f comprises the substeps of:

1) determining whether a first combined cut/boost of the first equalizer band and the second equalizer band is too great;

2) determining whether a second combined cut/boost of the second equalizer band and the third equalizer band is too great; and

15 3) determining whether a third combined cut/boost of the first equalizer band and the third equalizer band is too great.

sub-P10

12. The method of claim 11 ~~wherein steps f1 and f2 use a relationship for adjacent bands and step f3 uses a relationship for non-adjacent bands.~~

sub-P13

13. A method of transferring data over a network, the method comprising the steps of: transmitting from a first computer on the network to a second computer on the network a set of electronic signals defining one or more modules to improve audio quality of the second computer performed on the second computer, the one or more modules including:

a first set of instructions to determine a type of a Universal Serial Bus (USB) speaker of the second computer;

25 a second set of instructions to select a set of filter coefficients for a digital filter based upon the type of the USB speaker; and

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a third set of instructions to realize a parametric equalizer using a digital filter, the digital filter producing an output signal to be input to the USB speaker from the set of filter coefficients and an input signal.

5 14. A method of claim 13 wherein the second set of instructions further include:
a fourth set of instructions to receive equalizer parameters; and
a fifth set of instruction to calculate the set of filter coefficients from the equalizer parameters if received without regard to the type of the speaker.

10 15. The method of claim 14 wherein the third set of instructions comprise:
a seventh set of instructions to realize a first equalizer band of the parametric equalizer, the first equalizer band having a first cut/boost parameter;
an eighth set of instructions to realize a second equalizer band of the parametric equalizer, the second equalizer band having a second cut/boost parameter; and
15 a ninth set of instructions to realize a third equalizer band of the parametric equalizer, the third equalizer band having a third cut/boost parameter.

16. The method of claim 15 wherein a tenth set of instructions for insuring a first combined cut/boost of the first, second and third equalizer bands is not too great.

20 17. The method of claim 16 wherein the tenth set of instructions comprise:
an eleventh set of instructions to determine whether a second combined cut/boost of the first equalizer band and the second equalizer band is too great;
a twelfth set of instructions to determine whether a third combined cut/boost of
25 the second equalizer band and the third equalizer band is too great; and
a thirteenth set of instructions to determine whether a fourth combined cut/boost of the first equalizer band and the third equalizer band is too great.

18. The method of claim 17 wherein:
30 the eleventh set of instructions uses a relationship for adjacent bands to determine whether the second combined cut/boost is too great;

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the twelfth set of instructions uses the relationship for adjacent bands to determine whether the third combined cut/boost is too great; and

the thirteenth set of instructions uses a relationship for non-adjacent bands to determine whether the fourth combined cut/boost is too great.

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